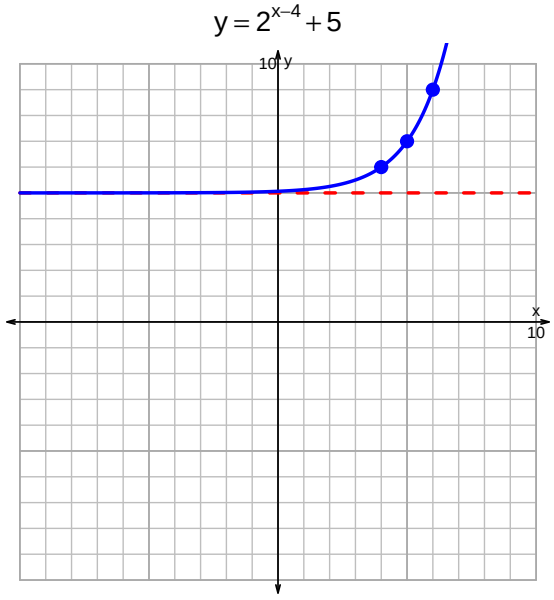
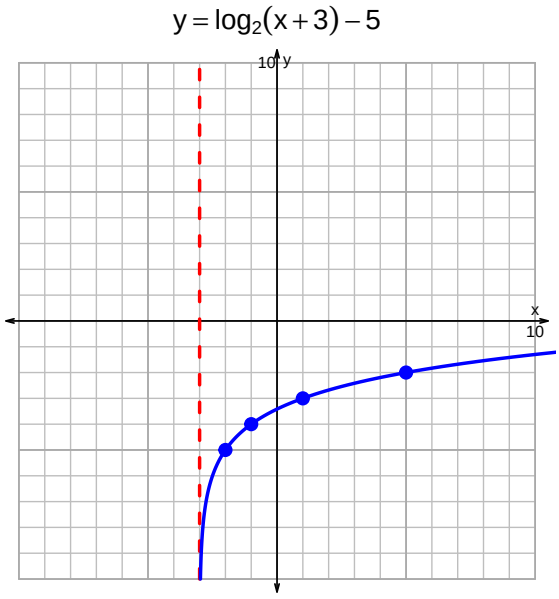
Name: Date:

S18QUIZ: EXP LOG (SLTN v205)

1. Graph $y = 2^{x-4} + 5$ and $y = \log_2(x+3) - 5$ on the grids below. Also, draw any asymptotes with dotted lines.





2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$17 = \left(\frac{7}{4}\right) \cdot 2^{-3t/5}$$

Divide both sides by $\frac{7}{4}$.

$$\frac{17 \cdot 4}{7} = 2^{-3t/5}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{17 \cdot 4}{7}\right) = \frac{-3t}{5}$$

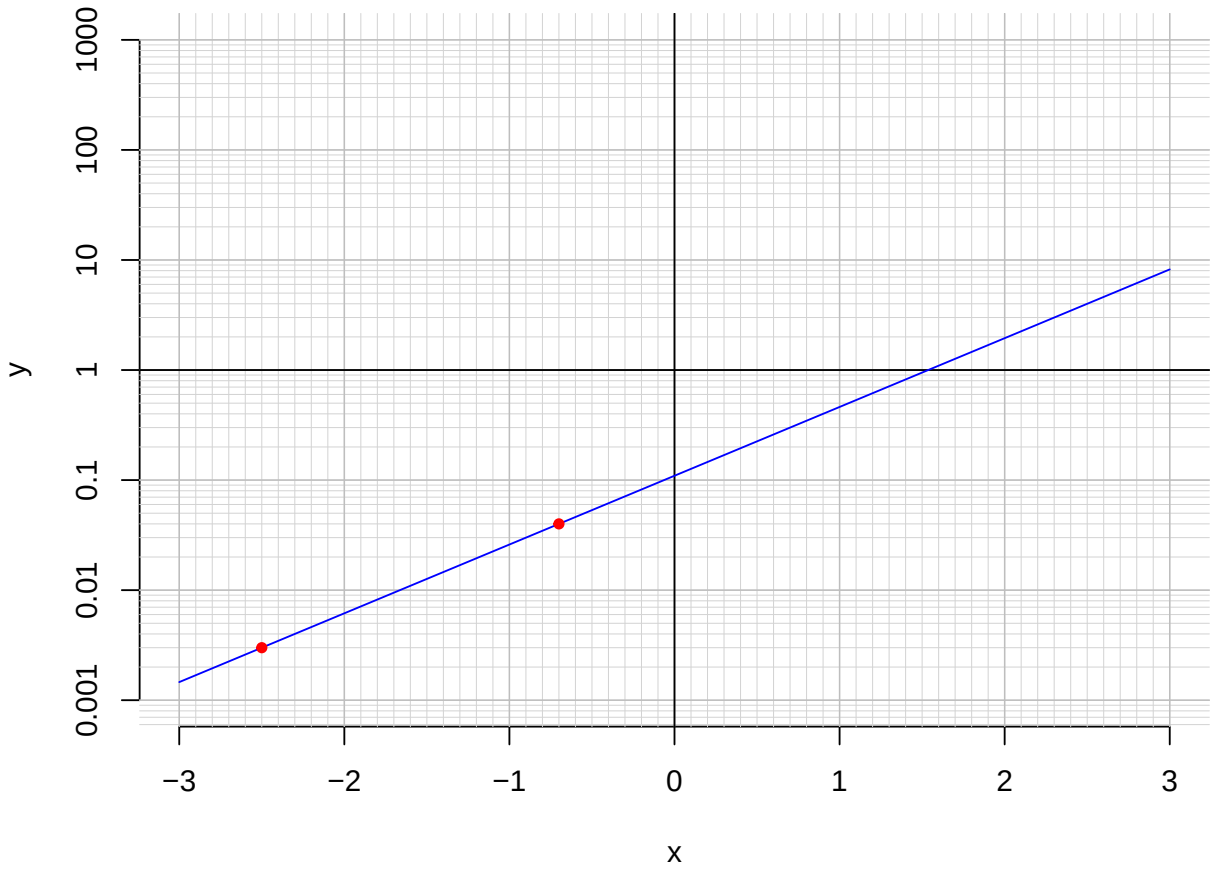
Divide both sides by $\frac{-3}{5}$.

$$\frac{-5}{3} \cdot \log_2\left(\frac{17 \cdot 4}{7}\right) = t$$

Switch sides.

$$t = \frac{-5}{3} \cdot \log_2\left(\frac{17 \cdot 4}{7}\right)$$

3. An exponential function $f(x) = 0.11 \cdot e^{1.44x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-0.7)$.

$$f(-0.7) = 0.04$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{1.44} \cdot \ln\left(\frac{x}{0.11}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.003)$.

$$f^{-1}(0.003) = -2.5$$